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ABSTRACT

The demand for worker literacy is increasing in nearly every occupation, from entry-level blue collar to top professional and technical. The types of reading and writing required on the job differ considerably from the literacy activities required of students in schools. Most of the reading done in the workplace environment is done for the express purposes of doing, learning, and assessing, whereas most of the reading done by secondary students is done to obtain information needed to answer teachers' questions. Student-based theories of composition and useful reading comprehension must therefore be modified before they can be applied meaningfully to the special forms of workplace literacy. Various models have been developed to explain both the product and process of reading and writing (including schema theory, oracy and alternate systems, and metacognition). Schools generally use product theories, which cannot fully take into account the complexities of writing at work. One useful model that can be adapted to develop a job literacy problem-solving model is Flower and Hayes' Cognitive Process Theory of Writing. According to the model, writers anticipate their audience and define their purpose, generate the ideas they need to convey, organize their ideas, translate them into a form that will be useful to others, review and evaluate them, and eventually revise them. (Three examples of the operation of the job literacy problem-solving model and a bibliography are provided.) (MN)

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Training for job literacy demands:
What research applies to practice

Abstract

Literacy, which permeates the workplace, is strongly influenced by the special contexts of place and purpose. Workers regularly read and write as an aid to communicating, learning, and performing tasks. Nearly every occupation from entry level blue collar to top professional and technical calls for increasing uses of literacy.

Types of reading and writing on the job differ considerably from the literacy activities of students in schools. The purposes and strategies involved in student reading and writing in school are often inappropriate and ineffective in the workplace. In a similar manner, student-based theories of composition and of useful reading comprehension must be modified before they can be applied meaningfully to the special forms of workplace literacy. A useful model which can be adapted to develop a job literacy problem-solving model is Flower and Hayes' "Cognitive Process Theory of Writing." This problem-solving model is a tool for understanding the process of job-related reading and writing. Examples drawn from the work of several researchers, including ourselves, seem congruent with this model. We suggest this model as a basis for further research into the nature of workplace literacy across several occupations and as guidelines for educators wishing to develop literacy training materials which simulate the integrated, problem-solving nature of observed job literacy tasks.

This paper examines the nature of literacy in the workplace from several perspectives. The first section is an overview of the range of reading and writing demands and strategies found in the workplace. The second section examines some theoretical frameworks useful for understanding the special information processing and print use found in the workplace. The third section outlines and discusses concrete implications of current research findings for improving adult education job literacy programs. The Appendices include detailed discussion of job literacy processes as examined through the Flower-Hayes' Model.

SECTION 1

LITERACY IN THE WORKPLACE

The demand for literacy in the workplace has increased dramatically over the last several decades. Job-related reading and writing have become so important that these activities comprise the majority of reading and writing performed by most adults. Two factors are important in understanding the nature of work-related literacy: a) the time spent on reading and writing and b) the difficulty level of the materials. Almost all workers are required to read some work-related materials on a daily basis with an average time of approximately two hours per day. The difficulty level of work-related materials is high: 10th to 12th grade level or higher. It may seem surprising that workers demonstrate more competence in reading work-related materials than reading for general purposes (a half to one grade level higher), but this perhaps is explained in that workers read for specific information and that this type of reading tends to be repetitious. Because workers have background knowledge in their jobs, a high concentration of job-relatedness in reading materials can account for several grade levels of difference.

Diversity characterizes reading and writing in the workplace: reading and writing forms, memos, manuals, brochures, charts, graphs, correspondence, computer printouts, and several other forms of specialized literacy materials. Basic purposes for reading at work can be classified as follows:

1. Reading to do: The highest percentage (approximately 80%) of job-related literacy involves reading information to accomplish a specific task. Once the job is completed, the information can be and often is forgotten.

2. Reading to learn: A minor amount of reading at work (usually less than 25%) involves reading to learn information which needs to be remembered for later use.

3. Reading to assess: The least demand for reading (approximately 16% of professional reading) involves examining material to assess its usefulness for some purpose, task, or person.

Broader uses of literacy at work include reading to gain background knowledge, analyze problems, respond to problems, advise customers, and solve problems.

One of the most startling dichotomies found exists between literacy at work and at school. Although the raw reading time per day of high school students and blue collar workers is comparable (97 to 98 minutes), the purposes and applications of reading and writing vary dramatically. Workers read and write to accomplish tasks, solve problems, and make evaluations about the usefulness of material. Literacy in the workplace relies heavily on extralinguistic cues and makes use of social systems. For example, workers often move back and forth from print to equipment and then perhaps back to a different piece of print. Workers read, look, do, and ask others. The social aspect of asking and discussing is highly important.

Compare this to student literacy. Students in secondary schools read primarily to obtain information needed to answer teacher questions. Student writing is used to take notes, answer short questions, and to copy information. There is little evidence that students demonstrate high-level skills in reading to assess or evaluate or in writing to communicate or complete a task. The paucity of writing in schools is in direct contrast to the amount of writing that occurs at work. Student writing places more emphasis on producing a standardized written product and less on solving problems, communicating ideas, or accomplishing tasks. Literacy in schools is often perceived as a series of discrete exercises that require no comprehension or reflective skills.

INCREASED LITERACY IN THE WORKPLACE

It appears clear that only a small and shrinking number of jobs in which workers can function with low-level literacy skills is available. Most newly created jobs call for reading and writing skills considerably above previous basic levels. The nature of work in the United States and other industrialized countries is changing. As new jobs are created and old jobs disappear, new levels and types of "basic skills" for employment are also created. Department of Labor projections of occupation areas experiencing largest growth include service workers, psychiatric aides, dental assistants, claims clerks, secretaries, and sales clerks. Among the occupations projected for greatest growth by 1990 of Labor Statistics areas:

Industrial robot production
Geriatric social work
Energy technicians
Industrial laser processing
On-line emergency medical
Genetic engineering

Jobs in which there are large declines in employment include farm laborers and tenants, logging workers, housekeepers, maids, and home child-care workers.

It is important to understand that the impact of change will not be that all jobs will be high-tech, but that high tech will affect more jobs. High-tech jobs will account for only a small percentage of new jobs (approximately 7 percent) in the next few years; however, entire classes of skilled jobs are likely to be taken over by robots. Consequently, a higher level of literacy skills will be needed to enable workers to perform a wider range of duties and to move from task to task and duty to duty. As Parnell has argued, the need will be for "broad technicians" rather than "high technicians."

The implications for adult education are important. Adults in need of retraining have few occupational choices if they are unable to meet the high literacy requirements of the workplace. Basic skills deficiencies in the workplace have been documented by the Center for Public Resources Survey of Basic Skills in the U.S. Work Force (1982) to be a major barrier to job advancement. In this survey, some of the basic skill difficulties reported were:

Secretaries having difficulty reading at the level required by the job.	30%
Managers and supervisors unable to write paragraphs free of mechanical errors.	50%
Skilled and semi-skilled employees, including bookkeepers, unable to use decimals and fractions in math problems.	50%

The cost to industry resulting from poorly educated workers is enormous. Companies such as Mutual of New York report that approximately 70% of their correspondence must be corrected or

retyped at least once. Safety concerns over workers not being able to read warnings and to follow written directions have been issues in a growing number of court cases and have led to several firings at Westinghouse Electric Corporation's defense gear plant in Sunnyvale, California. U.S. employers in auto industries are replacing unskilled workers with robots following the Japanese lead. Larry Vickery, G.M.'s director of employee relations, has reported that GM in the early 1980s employed one skilled worker for every 5.6 assembly line workers. He projected a one-to-one ratio by the late 1990s.

Respondents in the Center for Public Resources (1982) survey were concerned about costly one-time mistakes resulting from low worker-literacy levels. Examples cited include workers killed because of inability to read warning signs, costly mistakes caused by workers' inability to comprehend correspondence, and time spent on instructing in the use of equipment as opposed to workers reading step-by-step written instructions. Minimal ability in applied computation and measurement, according to respondents, regularly accounted for losses in production, quality, and general corporate performance.

RELATIONSHIPS OF BASIC SKILLS TO JOB PERFORMANCE

Although an underlying assumption behind concern about basic skill levels in the workplace is that job performance is related to basic skill levels of workers, the research suggests that the relationship is by no means overwhelming or direct. To a large extent, research about the relationship of literacy to job performance is sketchy and based upon information obtained from military studies. However, research does indicate key points: a) if a worker's reading ability is more than two grade levels below the level of the instructions, performance of an assembly task will decrease significantly; and b) inexperienced workers are more likely to use print materials than experienced workers. Although correlations have been proven to be significant between job performance and reading ability, they explain only a small percentage (8% to 13%) of variance in performance. In a review of basic skills training in the military, it has been demonstrated that basic skills competence does not seem to be a strong determinant of success. Obviously, a good deal more than basic reading ability, as measured by a reading test, is needed to explain job performance ability.

In most occupations, literacy is important in its role in solving problems. Mikulecky and Winchester's study of literacy ability among nurses highlighted a much higher relationship between literacy use in solving problems than in performing basic job skills. For example, nurses use print materials on the job in a variety of ways to solve problems. RNs read information about patient conditions and provide oral summaries to LPNs and SPNs who often take notes on these summaries. The purpose for both reading and writing is to anticipate and to solve work-related problems. Nurses in the study were alert for particular details about patient conditions while reading and were careful to make note of such details and key information while writing.

RNs, in particular, were called upon to read in order to anticipate problems. Successful job performance called for skimming and checking documents for changes in treatment or in identifying the need to order new medications. LPNs relied a good deal on the patient notes they took from RN summaries at the beginning of each shift, but they, too, tended to skim and check these in a fashion similar to the strategies RNs used on more lengthy material. LPNs used abbreviations to organize just as RNs did with the original patient descriptions. On occasion, nurses would use reference works such as the Physician's Desk Reference to gather information to check for potential problems related to diet and drug interactions.

SECTION II:

LITERACY THEORIES AND THEIR APPLICABILITY TO JOB LITERACY

Many theories have been generated to describe the process by which individuals read and write. These theories originate in the diverse fields of education, cognitive psychology, linguistics, anthropology, computer science, social psychology, and learning theory. Models which have been developed to explain both product and process are discussed below.

Theories of Reading Process

Numerous models of the reading process, ranging from linear letter-by-letter through psycholinguistic and interactive models to pure comprehension center models, have been developed. Although these are useful for explaining how readers arrive at meaning while looking at print, they are not useful in explaining the process by which workers use print to solve problems and complete tasks.

Schema Research:

Schema (previous knowledge of and experience with a topic) is the basic structural unit in schema theory and provides a useful foundation for subsequent understandings and performance. Theoretical research into the role of schema in enhancing reading comprehension helps to explain the process by which workers are able to use print in the workplace. It originates studies in cognitive psychology, linguistics, and computer science research on artificial intelligence.

According to schema theory, the more familiar readers are with topic and format of new material, the greater will be the likelihood of understanding and using it. Individuals who possess a wide variety of literacy experiences in both topic and format are more likely to have relevant experiences to draw upon than are individuals acquainted only with school reading. It is much easier for people with wide reading and writing experiences to master new reading or writing tasks than it is for individuals with limited literacy experiences outside of school and only a smattering of textbook reading and question answering experiences in school.

Schema research helps to explain the problem of transferring school learning to out-of-school settings. The narrow range of school learning does not prepare learners to function adequately within the workplace. Because learning a new task is made easier when a learner can activate appropriate schema, it would seem that to better enable students to transfer learning from school to work they should be provided experiences that include thinking through multi-step plans in order to accomplish tasks.

Oracy and Alternate Systems

Models of "oracy" (oral verbal skills) view language in social and linguistic contexts, placing it not as an object, but as an event with both psychological and sociological components. Some models draw upon the study of semiotics (signs) to suggest that the use of linguistic signs is complex and multimodal in nature. Often cues from alternate communication systems are embedded in and make up this linguistic cue system. This work, however, only indirectly addresses the problem-solving nature of job literacy.

Metacognition

Self-monitoring and directing of attention while reading (meta-cognition) involves monitoring the level of attention through self-questioning and regular hypothesis testing. Research indicates that effective readers continually make decisions about purpose for reading, strategies to be employed, value of information being considered, and the relationship of information to what the reader already knows. Although most research involving metacognition has addressed school literacy rather than work literacy, it is a helpful model for examining the problem-solving and self-monitoring nature of job literacy.

THEORIES OF THE COMPOSITION PROCESS

Although there are useful models both of the process and the product of writing, schools most commonly use product theories. The most popular ones share the following components:

1. Emphasis is placed on a[illegible]sis of the written product rather than the writing process.

2. The goal is to develop good writers for school purposes. Using correct form for school tasks becomes the main focus. The

assumption is made that academic writing skills will transfer to other types of writing such as workplace.

3. Writing is viewed as a series of linear steps. For example, in the planning stage, one needs to a) gather ideas, b) develop the thesis statement, and c) outline the thesis statement. Emphasis is placed on paragraph development. One must master the paragraph before writing a theme which is a series of paragraphs.

4. Emphasis is placed on planning before writing. Consequently, experimentation during writing is not encouraged.

5. Readings are used as models for students' writing. The limitation of product theories is that they cannot explain the process involved in transferring skills to settings other than school. It has been postulated that product theory discourages thinking and discovery, stifles creativity and experimentation. It is adequate to train writers who can function within academic settings but who would not write in other situations.

Product theories, because of the immense differences in work and school literacy, have not been very useful in explaining the dynamics of writing in the workplace. Instead, it is preferable to use process theories which take into account the complexities of writing at work. Components of process theories that are applicable to workplace writing are:

1. Writing is a problem-solving activity:
A major part of the writing process is defining and solving a problem. Unlike school writers, business writers make choices in areas such as language, syntax, content, and organization as related to purpose and audience every time they write.

2. Writers need to anticipate their audience:
Business writing is targeted toward a specific audience with specific intent such as to convey information or persuade.

3. Writing is a self-initiated activity:
Writers have both process (how to write) and content (what writer wants to say) goals in mind when they write, even when writing is assigned. The self-initiated mode has been characterized as "reflexive" as opposed to "extensive" in which writers devise their own goals rather than have them devised for them.

4. Steps in the writing process are not necessarily linear:
Workplace writing, unlike school writing, often intentionally violates traditional writing rules and standards since workplace writing must sometimes be informal, indirect, intentionally confusing (as in the case of some advertising) depending on audience and purpose.

SECTION III.

IMPLICATIONS FOR ADULT EDUCATORS

Traditional teaching of reading and writing to adults, like that in secondary schools, seems to have little transfer to the workplace. It is discouraging to note that military research indicates that gains made in such classrooms with traditional materials and approaches tend to be lost within eight weeks.

The challenge for educators is to devise methods of teaching which will include some of the types of literacy found in the workplace. Materials, activities, and methods used should be devised to fit the specific needs of the learner's workplace literacy. Central to any job-related literacy goal, however, is expanding reading and writing beyond simple book reading and workbook writing. Learners need to experience literacy for problem solving and for accomplishing meaningful tasks.

Research indicates that superior job performers differ from their less able counterparts in their ability to think through what is needed on the job and then to apply reading and writing abilities to complete those job tasks efficiently. Superior workers know when to skim, when to look for new information, how to decide which information to jot down, how to compose meaningful messages to co-workers, when to check a reference, and how to find ways to organize notes and information to better do their jobs.

Unfortunately, traditional adult training does little to improve workers' abilities directly in any of the above areas. However, a number of simulation techniques which can be used to bring training and application closer together are available to the adult instructor. The key is to develop learning activities which replicate literacy requirements in the workplace. Rather than assume that learners

will be able to use basic skills to solve problems and critically to analyze situations, the instructor can create problems that call for the use of basic skills like those needed in the workplace.

For example, assessing and judging the importance of information is an essential skill. For the inexperienced worker, every detail is weighed equally. In order to learn how to assign priority, students can benefit from group activities in which they learn content and organization from each other through sharing and discussion while locating information and listing ideas in order of importance.

In order to emulate the use of literacy at work to complete tasks and problems, learners should be given the opportunity to read job-related materials (manuals, charts, tables, directions, etc.) to glean the information needed to accomplish similar ends. For example, nursing instructors, in giving students their assignment prior to each clinical experience, could ask them to skim, prior to each day's experience, all available information about the patient. The goal for each student would be to locate needed information and to prepare an organized plan of action. Similar procedures could be developed for nearly any occupation. The idea is to link basic skills and thinking together.

Written communication is an essential element of many jobs and is required of technicians, mechanics, nurses, and a variety of other vocations. Adult educators facilitate learning to communicate clearly by allowing learners to react to examples of obviously well written and poorly written notes and other forms of written communication. This procedure, especially if it is done in groups, can help to develop a sense of criteria by which learners can judge their own writing.

If an adequate response to workplace literacy needs is not devised, the danger is that workers, who do not receive competent training in literacy work skills, are often faced with learning haphazardly and perhaps incorrectly from co-workers. Adult educators help learners acquire performance skills by creating simulation activities which 1) give the learner contact with and feedback about the actual job literacy demands and 2) systematically introduce tasks needed to regularly perform on the job as instructional practice material.

SUMMARY

The nature of literacy in the workplace has changed dramatically in the last few years. There is a greater demand for both higher level literacy and more diverse literacy applications than in the past. Because workplace literacy differs significantly from school-based literacy in that it requires problem solving, communicating ideas, and completing tasks, it is important for adult educators to respond to the need for training with programs that will embody a sensitivity to workplace conditions. Given the resulting high cost to industry due to problems asscciated with low-level literacy skills of workers, a responsible method of teaching reading and writing skills is imperative.

Classroom teachers can best prepare learners for the literacy demands outside of school and in the workplace by expanding traditional concepts of literacy experiences. This does not mean directly training for particular jobs or occupations. However, it does mean that the amount of time spent reading and writing must be increased. The learner must be given the opportunity to experience a broader range of "real world" print materials which they will use for solving problems and completing tasks. These processes, like those in the workplace, ought to involve working with others, learning the art of inquiry, and thinking through multi-step plans.

A JOB LITERACY PROBLEM-SOLVING MODEL

Since workplace literacy is used primarily for problem solving, product-based models of composition and most cognitive models of reading process are inadequate.

The diverse uses of literacy at work can be placed within the context of a model. The Flower/Hayes model (1981, 1984), itself an adaptation of an earlier problem-solving model, can be adapted easily to develop a job literacy problem-solving model. This can serve as a tool for understanding the process of job-related reading and writing.

The job literacy examples which follow are taken from the work of several researchers and illustrate how individual components of the modified version of the Flower/Hayes cognitive model (figure 1) are evident in workplace reading and writing. The model can serve as a basis for further research into the nature of workplace literacy across several occupations. In addition, the model can serve as a guideline for educators wishing to develop literacy training materials which simulate the integrated, problem-solving nature of observed job literacy tasks.

I. TASK ENVIRONMENT

THE GENERAL PROBLEM

Anticipate Audience and Define Purpose

The writer of a Telex message must relay information as concisely as possible (purpose) to an overseas office (audience). The specific audience is the sales department in the company's overseas office.

Generate Ideas

When there is a problem in a circuit board, an electronics technician checks the schematics to see what parts could be causing the problem, then moves to the xerox board to check the input/output at points along the lines to see if the problem can be located there. During this process, the technician reads information from varying formulas to generate ideas and solutions.

II. SCHEMA

Writer's long term memory

The electronics technician also needs to know how to read and interpret schematics. This involves background in the use of the product represented on paper and background in the format and "visual vocabulary" of schematic drawings.

III. LITERACY PROBLEM-SOLVING PROCESS

Organize ideas

A registered nurse makes notes to organize herself. To accomplish this, she systematically designs a worksheet using abbreviations, symbols, and color codes.

Translating

This stage involves converting marks on paper to useful information and converting ideas from one's head into information of use to others. A medical example is the nurse at the beginning of a shift who must read and understand the specialized language and abbreviations of charts and prescriptions. At the end of a shift, the nurse writes messages which must be concise and clear for the next shift.

Reviewing, evaluating, revising

Reviewing, evaluating, and revising is a recursive stage which occurs for both reading and writing. For example, a convention center employee operates at this stage when checking furniture and microphone placement against a set-up chart and instructions. A nurse is at this stage when she marks important procedures with red pen and then systematically reads and reviews them before performing procedures.

ILLUSTRATIONS OF THE JOB LITERACY PROBLEM-SOLVING MODEL IN OPERATION

Workers who use literacy skills daily to solve problems at work pass from stage to stage of the Job Literacy Problem Solving Model. The illustrations which follow indicate how workers in various situations use reading and writing to solve problems at work. The labels on the left refer to appropriate stages of the problem-solving model.

1. Telex message example

SAMPLE

ATTN: PAT GREENE

THKS INFO

DELAY SEEMS TO HV OCCURRED IN US CLD YOU PLS CONTACT DHL MILWAUKEE AND CHECK ON FLIGHT DEPARTURES PERHAPS THESE POUCHES SHLD BE COLLECTED EARLIER.

PLS ADVISE FINDINGS

REGARDS,

CC: RSVK
GRA

COMPONENTS OF PROBLEM-SOLVING MODEL	THE READING/WRITING PROCESS
TASK ENVIRONMENT	Initially I consider who could help me determine the reasons for the delay in receiving pouches? What department? What country? What person specifically?
Anticipate audience	
Define Purpose (dual)	I need to check on and locate where delays are occurring between Milwaukee and our foreign divisions, relay the information in as few words as possible, and direct the message to the people who are most likely to be able to help solve the problem.
Portion of Written Product Developed So Far	The message is written but it's too wordy and,therefore, would cost too much to send by Telex. It needs to be revised and abbreviated.
SCHEMA	[The writer needs to have a knowledge of the topic including how mail is

delivered, using pouches, where delays could possibly occur and how to abbreviate words for a Telex].

LITERACY PROBLEM-SOLVING PROCESSES

What other communication modes (telephone, letter, telegram, personal messenger) could I use to solve this problem besides sending a Telex? Which would be the best? Next best? If I use Telex, should I direct the messages to additional audiences?

Generating Ideas

Organizing Ideas

What needs to be done? I need to make the Telex message briefer while still relaying the necessary information. I need to locate problem in deliveries.

Goal Setting

It's important that this message gets to the person who can help me solve the problem, that it be written in as few words as possible, and that it can be processed and received soon. I also need an immediate response so I'll be friendly and polite.

TRANSLATING

The message is rewritten in its abbreviated form.

REVIEWING

Does the Telex meet the goals? Is it readable? If not, should I revise it?

Evaluating

Revising

Perhaps I should check with Sue on any ideas she may have on where the delays are occurring or whom I should contact.

Independent or Collective Process

MONITOR

The writer need not perform these processes in any specific order but rather can move back and forth between

the task environment, literacy problem-solving process, and schema.

2. Chart Reading Example

Room setup charts used by maintenance personnel at a hotel convention center are examples of workplace reading. The information on the chart (see Figure 2) is used to prepare a room for a meeting.

COMPONENTS OF PROBLEM-SOLVING MODEL	THE READING/WRITING PROCESS
TASK ENVIRONMENT	
Anticipate Task	Initially I consider what it is I need to accomplish and when it needs to be completed. Do I have enough information on the form and setup chart to be able to correctly setup the room?
Define Purpose	I need to set up the room as indicated on the setup chart, locate the necessary equipment, and complete it in time for the meeting.
Portion of Job Task Developed So Far	I know where I can locate the A.V. material and all of the furniture except for a table for the projectors. I need to find something else to use.
SCHEMA	The reader needs to be able to read a diagram for general information and have a knowledge of the A.V. materials needed and their location.

LITERACY PROBLEM-SOLVING PROCESS	How should I go about setting up this room (delegate parts of the job, do it all at one time, set up over a period of time, gather all of the materials and furniture first and then set up or gather it while setting up)? Which is best? Next best? Will the diagramed setup work for the room or are changes needed?
Generating Ideas	
Organizing Ideas	What needs to be done? I need to get the room set up as indicated on the chart and need to find an alternative for the A.V. small table.
Goal Setting	This room needs to be set up correctly and on time for the meeeting. All the A.V. materials should be checked.
TRANSLATING	The task of setting up the room is done according to the chart.
REVIEWING	Check the room. Is it set up correctly?
Evaluating	Does it match the diagram? If not,
Revising	should I change it or is it OK the way it is? The A.V. materials seem to be
Independent or Collective Process	functioning correctly, but maybe I should have someone else check them just to be safe. The above steps need not be performed in any particular order. The reader moves back and forth
MONITOR	between steps as needed to complete the task.

3. Reading/Writing Example

Often reading and writing are combined in the workplace as workers need to receive information from others in different buildings and on different shifts. The example below illustrates the uses of reading and writing for the problem solving required of a preparations cook who must arrive before his supervisor and communicate with others he rarely sees.

COMPONENTS OF PROBLEM SOLVING MODEL	READING/WRITING PROCESS
TASK ENVIRONMENT	
Anticipate Task	After I indulge in a chocolate croissant with my "morning mug of mud," I read my assignment sheet which was written by the assistant kitchen manager the night before. The sheet is basically a set of instructions which list the day's duties and in what order they need to be completed. There is a different assignment sheet for each day. I consider what I need to accomplish the job and when it needs to be completed. Do I have enough information on the assignment sheet to do the job? Do things need to be done in order? [The assignment sheet is a typed, multicopied form with hand written notes in the margins.]
Define Purpose	I need to follow a list of instructions on the sheet. ["3. Make Hummus" (after which was written "x2."). Another step read: "7. Complete Vegetable Prep". This was recorded on a separate sheet as a kind of chart which was similar to: Date: 4/20 Broccoli (bunches) 2 Carrots (lbs) 4 " " " " " " Zucchini 6]
Portion of job task developed	I know where I can locate all the ingredients I need, but I don't think I have enough to make a double batch of

so far.	hummus.
SCHEMA	[The prep cook needs to be able to read a chart for general information and have a knowledge of food preparation, quantities and possible problems that could occur.]
LITERACY PROBLEM SOLVING PROCESS Organizing ideas	How should I check if I have enough ingredients? Do I need to check the recipe card file or can I remember how much is needed? What should I do if there is not enough? What needs to be done? I need to check the recipes and prep the food as written on the assignment sheet. I need to figure out an alternative to the lack of some ingredients. [The recipe and ingredients were also listed in a chart form with separate columns according to the size of the recipe to be completed. The columns were marked "x1", and "xl/2", and the figures that headed these columns should correspond to those written in the margin of her assignment sheet.]
Goal Setting	I need to get the food prepared correctly and on time. I also need to mark off the assignment sheet when each task is completed.
TRANSLATING	[The tasks are completed according to the assignment sheet.]
REVIEWING	Check the sheet. Is everything correct? Is there anything else I need to do?
Evaluating	[At the bottom of the assignment sheet are two handwritten messages - one from the assistant manager and one from the "night prep" cook. The manager's message is a special

instruction concerning placement of food items in the walk-in refrigerator, and the "night prep" cook's note lets her know what leftovers are available and where to find them.]

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HOTEL CONFERENCE CENTER

CONVENTION DEPARTMENT

NICHOLET ROOM

Program _____

Contact Person _____

Day _____ Date _____ Time _____

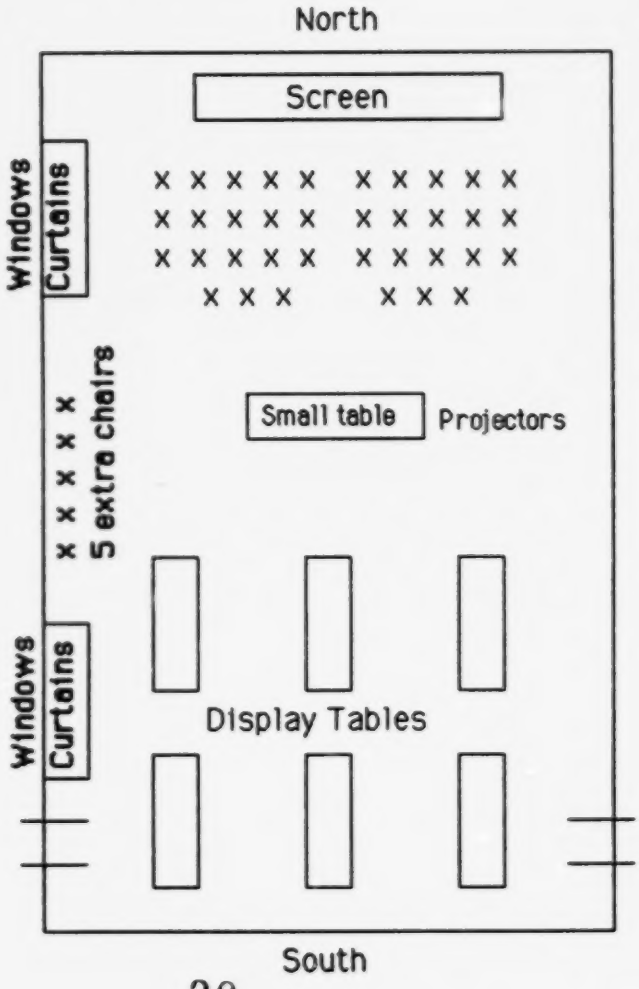
Room Capacity _____

A. V. Equipment:

overhead projector
film projector
cassette player
screen
small table for projector

Other:

5 extra chairs
check that curtains
close completely
6 display tables



JOB LITERACY PROBLEM SOLVING MODEL

(BASED ON FLOWER & HAYES, 1981, 1984)